

## DNMT2 Protein, Human, Recombinant (GST)

## General Information

Synonyms:	PUMET;RNMT1;tRNA aspartic acid methyltransferase 1;MHSAlIP;DNMT2;DMNT2
Protein Construction:	A DNA sequence encoding the human TRDMT1 isoform a (NP_004403.1) (Met 1-Glu 391) was fused with the GST tag at the N-terminus. Predicted N terminal: Met
Species:	Human
Expression Host:	Baculovirus Insect Cells
Accession:	O14717-1
Molecular Weight:	71 kDa (predicted); 60 kDa (reducing conditions)

## QC Testing

Biological Activity:	Activity testing is in progress. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.
Purity:	> 94 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μm filter, containing 50 mM Tris, 100 mM NaCl, 0.5 mM GSH, 0.5 mM PMSF, pH 8.0. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

## Preparation and Storage

**Reconstitution:**  
A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

**Stability & Storage:**

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

**Shipping:**

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

## Protein Background

DNMT2, also known as tRNA (cytosine-5-)-methyltransferase, DNA methyltransferase homolog HsaIIP, and TRDMT1, is a member of the DNA methyltransferase family of enzymes. DNMT2 enzymes have been widely conserved during evolution and contain all of the signature motifs of DNA (cytosine-5)-methyltransferases. It contains all 10 sequence motifs that are conserved among m(5)C MTases, including the consensus S:-adenosyl-L-methionine-binding motifs and the active site ProCys dipeptide, and its structure is very similar to prokaryotic DNA

methyltransferases. DNMT2 has close homologs in plants, insects and *Schizosaccharomyces pombe*, but no related sequence can be found in the genomes of *Saccharomyces cerevisiae* or *Caenorhabditis elegans*. While the biological function of DNMT2 is not yet known, the strong binding to DNA suggests that DNMT2 may mark specific sequences in the genome by binding to DNA through the specific target-recognizing motif. However, the DNA methyltransferase activity of these proteins is comparatively weak and their biochemical and functional properties remain enigmatic. Recent evidence now shows that Dnmt2 has a novel tRNA methyltransferase activity, raising the possibility that the biological roles of these proteins might be broader than previously thought.

### Reference

- Dong A, et al. (2001) Structure of human DNMT2, an enigmatic DNA methyltransferase homolog that displays denaturant-resistant binding to DNA. *Nucleic Acids Res.* 29(2): 439-48.
- Hermann A, et al. (2003) The human Dnmt2 has residual DNA-(cytosine-C5) methyltransferase activity. *J Biol Chem.* 278(34): 31717-21.
- Jeltsch A, et al. (2006) Two substrates are better than one: dual specificities for Dnmt2 methyltransferases. *Trends Biochem Sci.* 31(6): 306-8.
- Schaefer M, et al. (2010) Solving the Dnmt2 enigma. *Chromosoma.* 119(1): 35-40.

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